Bird observations on the Zamboanga Peninsula, Mindanao, Philippines

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Bird observations were conducted in Pasonanca Natural Park, Zamboanga City, Zamboanga del Sur, Philippines on 17–21 February 2008 and 29–31 May 2008 and in Lituban–Quipit watershed, Baliguian, Zamboanga del Norte, Philippines on 26–28 May 2008. Observations were also conducted in Lake Maragang–Mt. Timolan, Zamboanga del Norte, 26–28 May 2009. A total of 142 bird species were encountered of which 68 (47%) were Philippine endemics, seven (5%) were migrants and 13 were globally threatened endemics including the Critically Endangered Philippine Eagle *Pithecophaga jefferyi*, the first nesting record of the eagle in Zamboanga Peninsula since the early 1950s. The remaining forest cover in northern Zamboanga Peninsula is threatened with mining, illegal logging and subsistence agriculture. A listing of the birds recorded in the Zamboanga Peninsula is also presented.

INTRODUCTION

The Philippines ranks second in terms of number of threatened endemic birds in the world (Stattersfield *et al.* 1998, Collar *et al.* 1999, Mallari *et al.* 2001). Many of these endemic and threatened birds are restricted to one island or a group of islands. Among the islands whete a number of endemic birds are threatened is Mindanao. Mindanao was once part of the Greater Mindanao Pleistocene Island some 20,000 years ago, when the sea-level dropped up to 120 m below its current levels, thereby connecting the islands of Bohol, Leyte, Samar, Dinagat, Siargao, Mindanao and Basilan (Heaney 1993, Heaney *et al.* 1998, 2000). Interestingly, however, the western part of Mindanao, the Zamboanga Peninsula, differs from the rest of the island by having an endemic species of its own: the Zamboanga Bulbul *Ixos rufigularis*. Despite the importance of the Zamboanga Peninsula in terms of presence of restricted-range and endemic species, very few studies have been conducted in the area. Most of the available information on avifauna is derived from museum records (Dickinson *et al.* 1991, Lambert 1996, Collar *et al.* 1999, Kennedy *et al.* 2000, Brooks 2002) and trip reports of visiting birdwatchers.

Zamboanga Peninsula is politically divided into three provinces: Zamboanga Sibugay, Zamboanga del Norte and Zamboanga del Sur. Among the three ptovinces, Zamboanga del Sur has the most numbet of key conservation sites or Important Bird Areas (IBAs) as identified by BirdLife International and the Hatibon Foundation (Collar *et al.* 1999, Mallari *et al.* 2001), two of which are shared by Zamboanga del Norte. In the north-eastern part of Zamboanga del Sur lie Mt Dapiak and Mt Paraya (IBA PH108) where nine threatened birds ate teported. A total of eight threatened birds are known to occut on Mt Sugarloaf (IBA PH109) in the northern portion of the peninsula. South of Mt Sugarloaf is Mt Timolan Protected Landscape (IBA PH110) with five reported threatened species (Collar *et al.* 1999, Mallari *et al.* 2001). In 2008 we visited the Pasonanca Natural Park (IBA PH112) and the Lituban–Quipit Watersheds (IBA PH111), and in 2009 Lake Maragang–Mt Timolan Protected Landscape. This study presents a list of bird species and information on the conservation status of the remaining forests and thteatened bitds in these ateas.

Table 1. Summary of ornithological expeditions conducted in Zamboanga Peninsula, based on evidence in Dickinson *et al.* (1991) and Collar *et al.* (1999).

Expeditions	Dates
Sonnerat	1771
Dumont D'Urville	June–July 1839
US Exploring Expedition	January–February 1842
Challenger Expedition (Murray)	October 1874, January–February 1875
Everett	March–May 1878
Steere	October–December 1887
Menage Expedition	July–August 1891
Mearns	1903–04, 1906
Crane Pacific Expedition	1929
Prince Leopold of Belgium	April 1932
Lawrence	March–April 1937
Stott	August–October 1945
Rabor	1948
Rabor	March–May 1952
Noona Dan Expedition	August–December 1961
Rabor	April–May 1969

Previous ornithological fieldwork

Bird collections in Zamboanga Peninsula wete conducted by a number of expeditions ftom Sonnetat in 1771 up to the expeditions of Rabor in 1969 (see Table 1).

SITES SURVEYED IN 2008–2009

Lituban–Quipit Watershed

The Lituban–Quipit Watershed covers the municipalities of Siocon, Baliguian and Gutalac with the highest elevation of 1,047 m. This IBA was formerly logged by at least four large companies: TIMES, CURUAN Timber, Zamboanga Wood Products and JOLAR. Cutrently only DACON Timber Company operates in the area. Toronto Ventures Inc. mines gold and copper a few kilometres east.

We visited the remaining fotest patches in Sitio Lutongan (7°48.867′N 122°13.102′E, 418 m), Barangay Linay, in Baliguian, in the north-eastetn part of Zamboanga Peninsula, on 28–29 May 2008. Linay is an inland barangay of Baliguian bordering Zamboanga del Norte and Zamboanga Sibugay. There are still patches of secondary forest, averaging less than 100 ha in size. The secondary forests are confined to gullies and steep slopes interspersed with corn farms and forest clearings. Cleared areas are dominated by *Imperata cylindrica* while agricultural areas are mainly planted with rice. Some portions of the forest are planted with *Acacia mangium*, *Swietenia macrophylla*, *Gmelina arborea* and other exotic species. These tree plantations are patt of the tefotestation programmes initiated by the government to rehabilitate the forests, mainly through Integrated Forest Management (IFMA) programmes and Integrated Social Forestry (ISF) projects. Elevations are 380–750 m.

Pasonanca Natural Park

Pasonanca Natural Park (PNP) covers 17,414 ha comprising a 12,107 ha watershed and a buffer zone of 5,307 ha. The park is 7 km

from the city proper of Zamboanga and located at the tip of the Zamboanga Peninsula. Approximately 90% of the area is still covered with secondary and old growth dipterocarp forest (PASA Report 1997). The most dominant trees are *Shorea contorta*, *S. negrosensis*, *S. polysperma*, *S. palosapis*, *S. almon* and *Parashorea melaanonan*. Emergent trees reach 40 m in height while forest canopy reaches 18–25 m. The forest understorey is dominated by tree seedlings, rattan, woody vines, palms and different species of herbs, ferns and ground orchids. Exotic species like mahogany, *Acacia mangium*, *Gmelina arborea* and *Albizia* have been planted within the park. Mosses and liverworts are also common in Barangay Cabonegro and Barangay Nancy as elevation reaches almost 1,000 m.

A total of four sites were visited in PNP on 17–21 February 2008. These were Barangay Canucutan (6°58.663′N 122°4.091′E, 103 m), Barangay Baluno (7°1.338′N 122°1.897′E, 757 m), and Barangay Nancy (890 m) in La Paz and Barangay Cabonegro (820 m) in Tolosa (two days being spent at Baluno, one day at the other three sites). Baluno was visited again on 29–30 May 2008 while Intake Dam in Canucutan was visited on 31 May 2008. Of the areas visited, only barangays Nancy and Cabonegro contain mature secondary forests while barangays Baluno and Canucutan are composed of secondary forest mixed with tree plantations. The general terrain is rough to steep, with very steep slopes, and elevation ranges from 70 m to 1,300 m.

The management of PNP is shared between the Zamboanga City Water District (ZCWD) and the Department of Environment and Natural Resources (DENR) Region IX. ZCWD has reforested 300 ha with the support of the Local Water Utility Agency while the DENR Community Environment and Natural Resources Office (CENRO) in Zamboanga City has rehabilitated about 75 ha. ZCWD and DENR forged a Memorandum of Agreement (MOA) authorising ZCWD to conduct regular monitoring and patrol in the area.

Lake Maragang Protected Landscape

The Lake Maragang Protected Landscape (7°47′56″N 123°16′2″E; 763 m) lies adjacent to Mt Timolan Protected Landscape in Zamboanga del Sur. The area is accessible through Barangay Limas, Tigbao, along an old logging trail that leads to the lake and to an overgrown trail that connects to the secondary lowland forest in Mt Timolan Protected Landscape.

We visited the lake on 26–28 May 2009. It is surrounded by patches of secondary lowland dipterocarp forest mixed with established tree plantations mostly made up of exotic species, e.g. *Gmelina arborea* and *Swietenia macrophylla*. Less than half the immediate surroundings of the lake are secondary forest and most is confined to steep slopes and ridges. Gullies and areas closer to Mt Timolan are also made up of mature secondary lowland and mid-montane forest dominated by dipterocarp trees *Shorea*. Some portions on steep slopes closer to the barangays have been cleared for subsistence agriculture (mostly corn and sweet potatoes), rubber and abacca plantations. There are no permanent structures or establishments evident in the areas close to the lake except for an old watch-tower and floating raft. The lake is visited by local tourists during weekends and holidays.

METHODS

We spent a total of 110 observation hours in all sites visited where 20 observation hours were spent in Lituban–Quipit Watershed and 30 at Lake Maragang. Intensive all-day standard field observations from dawn to dusk were conducted using 10×42 binoculars. 'Playback' of sound recordings was used to confirm/determine presence and absence of species. Calls and songs were also recorded for future reference using a Microtrack digital recorder and K6 Sennheiser unidirectional microphone. Fruiting and flowering trees were located and revisited to detect fruit- and nectar-eating bird species. Watches from breaks in the canopy and the hillsides enabled us to observe larger above-canopy species (raptors and parrots). Night surveys were also conducted along trails.

We spent a total of 60 observation hours in PNP by following five 2-km line transects from 06h00 to 08h00 and 16h00 to 18h00 for two hours to identify and record the avifauna. All trails were located inside lowland to mid-montane forests. Bird observations continued during the day and at dusk were focused on finding threatened and endemic species, particularly Mindanao endemics. In the analysis of the results, we calculate relative abundance per species per site by adding the total number of individuals per species observed per site divided by the total observation hours spent for each site.

Information on land use, exploitation for cagebirds and hunting activities was also obtained from direct observations and from discussion with local people. We also visited households keeping captive native birds and conducted informal interviews in an attempt to document information on where captive birds were collected.

Systematic order, common names and taxonomic treatment follow Inskipp *et al.* (1996) with the exceptions of Mindanao Brown Dove *Phapitreron brunneiceps* where it follows Collar *et al.* (1999). Scientific names are in Appendix 1.

RESULTS

A total of 142 species of birds were recorded in all survey sites, of which 106 were found in Pasonanca Natural Park, 93 in the Lake Maragang–Mt Timolan area and 71 in the Lituban–Quipit Watershed (Appendix 1). Of the 142 birds observed, 16 (11%) were Mindanao endemics and 68 (47%) were Philippine endemics. We also recorded a total of 15 species of captive birds.

The most frequently encountered species in all sites was Zamboanga Bulbul (see Appendix 1; endemic species) followed by Orange-bellied Flowerpecker, White-eared Tailorbird (endemic species) and Coppersmith Barbet. These birds were easily observed as they are conspicuous and give distinct calls. The majority of species were encountered fewer than 10 times during the survey. Other species found include the Vulnerable Little Slaty Flycatcher and Blue-capped Kingfisher and the Near Threatened Rufous Hornbill, Writhed Hornbill, McGregor's Cuckooshrike and Blue-naped Parrot. A particularly significant survey record was an active nest of the Critically Endangered Philippine Eagle.

Threatened, near-threatened and endemic species

A total of 20 threatened bird species were observed of which 11 are restricted to Mindanao faunal region. Of these 11, five were observed in Lituban–Quipit Watershed and seven in Pasonanca Natural Park (Appendix 1). In the accounts below of some of these species, IUCN threat status after species names is taken from Collar *et al.* (1999) and abbreviated as: CR = Critically Endangered, VU = Vulnerable, NT = Near Threatened; while RR = restricted range, as defined in Stattersfield *et al.* (1998).

Philippine Eagle (CR) is distributed in the islands of Luzon, Samar, Leyte and Mindanao (Collar *et al.* 1999). In the 1990s a Philippine Eagle was retrieved by Protected Areas and Wildlife Bureau (PAWB) from Zamboanga. In 2003, another was retrieved in Siocon and placed in the Philippine Eagle Center. Tail and wing feathers of this species were also retrieved by the ZCWD and DENR Region 9 Eagle Watch Team in Pasonanca Natural Park in 2004, 2007 and most recently on 19 January 2008. Soon afterwards, an active nest was located by locals and monitored by the DENR Region 9 Eagle Watch Team in Barangay Linay, in the town of Baliguian,

Zamboanga del Norte. The nest was on a branch of a dipterocarp located in a forest patch of about 100 ha surrounded by patches of secondary forest mostly concentrated on ravines and gorges. About 300 m from the nest was a forest clearing with a house. The roughly six-month-old eaglet was seen in the nest while both parents were observed within 50 m of it during the survey. Photographs were taken of both the parents and the eaglet in the nest. This is the first confirmed nesting record of the species in Zamboanga Peninsula since the 1950s.

Philippine Duck (VU) was observed in ricefields in Siocon, Zamboanga del Norte, and in Lake Maragang, Zamboanga del Sur. A total of five individuals were observed moving from the rice paddies together with Little Egrets, Cattle Egrets, Javan Pond-heron and Cinnamon Bittern in Siocon on 26 May 2008. At Lake Maragang, 42 adults accompanied by 24 immatures were observed on the lake on 26–27 May 2009.

Mindanao Brown Dove (VU) is known from Mindanao and Basilan but was historically not recorded from the Zamboanga Peninsula (Collar *et al.* 1999). However, a single individual was observed by the team on the trail in secondary forest along one of the ridges in Lituban–Quipit Watershed at around 680 m. The individual was heard calling about 10 m away before it flew to trees on the lower slopes and disappeared. The call was similar to that of a White-eared Brown Dove but was deep and shorter: *hoot-hoot-hoot-hoot-hoot*. The bird was distinctive: brown with iridescent purple collar, reddish-orange eyes, brownish-black naked periorbital skin and no white line below the eye (seen in e.g. Amethyst Brown Dove).

Mindanao Bleeding-heart (VU) is recorded from six Philippine islands, with old records from Zamboanga in 1887 and 1898 (Collar *et al.* 1999). Locals reported it in the Lituban–Quipit Watershed. We did not encounter it in the wild but found two caged individuals in one household in Barangay San Jose, Siocon. They had been in captivity for two months, having reportedly been poached by a local hunter and sold for Php700 (US$16) each.

Philippine Eagle Owl (VU) is known from six Philippine islands, and was recorded historically on Mindanao from only three sites. One individual was heard calling repeatedly a low, deep *hoo-hoo-hoo-hoo* in a forest patch in Lituban–Quipit Watershed, close to where the Philippine Eagle nest was found. Using playback, the bird responded and perched on a branch about 20 m from where we were standing.

Silvery Kingfisher (VU) is distributed across seven Philippine islands and is historically recorded from six sites in Zamboanga Peninsula, with four specimens taken in the nineteenth century from Zamboanga City (Collar *et al.* 1999). We observed this species in the Cabonegro and Canucutan areas in PNP. One bird was seen at a bridge crossing en route to Nancy on 19 February 2008 and another was heard calling at Cabonegro on 20 February 2008. At Tumaga River in Canucutan, we encountered two more individuals (adult and juvenile). The adult brought food items to the juvenile at least four times. One prey item was a grasshopper and one was a freshwater fish.

Philippine Dwarf Kingfisher (VU) ranges through the Philippines except Mindoro, Palawan and West Visayas. Two individuals were observed at Intake dam in Sitio Canucutan, PNP, and one individual was observed in the Lake Maragang–Mt Timolan area.

Mindanao Broadbill (VU) occurs in Dinagat, Siargao, Mindanao and Basilan. A total of 28 birds were collected from four sites on the Zamboanga Peninsula between 1887 and 1993 (Collar *et al.* 1999). Lambert (1996) reported the species as absent from the western part of southern Mindanao, but we saw and photographed it in Cabonegro, PNP: a group of six individuals (four males, two females) in a mixed-species feeding flock. Two individuals were also encountered in Lake Maragang (26 May 2009).

Philippine Leafbird (VU) has the same range as Philippine Dwarf Kingfisher. It was recorded on Mt Sugarloaf in 1969 where six individuals were collected (Collar *et al.* 1999). We observed it at Baluno and Cabonegro, PNP. In Cabonegro, two birds were seen feeding on fruits in a forest subcanopy. This is the first record of the species from Zamboanga del Sur.

White-eared Tailorbird (RR) was observed in PNP, Lituban–Quipit Watershed and Lake Maragang. Two were seen in Canucutan, PNP, moving in shrubs and ferns in the forest understorey looking for insects. The species is easily detected as it makes a distinctive call when its territory is approached.

Slaty-backed Jungle Flycatcher (RR) occurs on Leyte, Samar, Siargao, Mindanao and Basilan. We observed one in Nancy, PNP, flycatching in the understorey as it moved with a mixed-species flock.

Little Slaty Flycatcher (RR) occurs on Mindanao. A pair was seen and photographed moving through dense vegetation in Intake, PNP, Canucutan, Zamboanga City. One individual in a different location was also heard calling.

Species and habitat conservation issues

Hunting of wildlife either for meat or for the pet trade was rampant in the Lituban–Quipit Watershed. A number of locals were also engaged in hunting Long-tailed Macaque *Macaca fascicularis*, Philippine Warty Pig *Sus philippensis*, Philippine Deer *Cervus mariannus* and larger species of birds. The total number of birds kept in cages amounted to 44 individuals of 16 species, namely Philippine Hawk Eagle (1), Amethyst Brown Dove (2), White-eared Brown Dove (13), Mindanao Brown Dove (2), Black-chinned Fruit Dove (1), Green Imperial Pigeon (2), Mindanao Bleeding-heart (2), Emerald Dove (1), Blue-naped Parrot (2), Blue-crowned Racquet-tail (1), Colasisi (12), Mindanao Hornbill (1), Rufous Hornbill (1), Coleto (1), Red-striped Flowerpecker (1) and Java Sparrow (1).

Timber poaching for commercial and household use was rampant in the Lituban–Quipit Watershed. In addition, re-opening of abandoned farms and clearing regenerating secondary forests for subsistence agriculture were also observed. These practices have profound effects on the avifauna of the area including the Philippine Eagle, the nest of which was located in the middle of an abandoned farm while the three other alternative nests were all in clumps of trees in the middle of forest clearings and corn farms.

Efforts to rehabilitate the area were mostly focused on planting fruit trees and exotic tree species, e.g. mahogany *Swietenia macrophylla*, *Acacia mangium*, *Gmelina arborea* and other fast-growing species. Many of these were planted even within forest clearings, around water sources and in slopes and gullies close to existing forest patches. DENR has organised local households into cooperatives and peoples' organisations to implement Integrated Social Forestry (ISF) projects, and has awarded 'Industrial Tree Plantation Certificates' to private corporations and individuals to rehabilitate portions of the watershed.

DISCUSSION

Our surveys generated the first comprehensive list of birds occurring in the southern portion of the Zamboanga Peninsula and provide preliminary information on threatened birds and the status of three key conservation sites. The total number of resident forest birds recorded during the survey represents around 62% of the forest species occurring in Mindanao. We encountered most of the lowland threatened and endemic species of Mindanao except for Celestial Monarch *Hypothymis coelestis* and Miniature Tit Babbler *Micromacronus leytensis*. In the Lituban–Quipit Watershed the larger species of pigeons, e.g. imperial pigeons, were also not

encountered. However, a larger patch of lowland secondary forest within Siocon Resource Reserve may provide a suitable habitat for some of the lowland forest birds we did not record.

The Philippine Eagle is a lowland forest resident bird that may venture into forest edges and agricultural clearings close to forest habitats (Dickinson *et al.* 1991, Collar *et al.* 1999). The presence of a breeding pair in Lituban–Quipit increases the conservation importance of the area. The Philippine Eagle Foundation Inc. (PEFI) and the Regional DENR 9 Eagle Watch Team have been instrumental in raising conservation awareness in the local communities and the local governments of Baliguian and Siocon. Consequently, these communities and governments were aware of the significance of the Philippine Eagle and felt proud of its presence in their area. This was taken by DENR 9 as an opportunity to declare the area as a Critical Habitat under the Philippines Wildlife Protection Act (Republic Act 9147). However, practical and efficient conservation programmes that address the habitat degradation, wildlife and forest protection and the needs of the local communities are still badly needed. Local communities need to understand that areas around all the alternative nest trees should be immediately protected and freed from all forms of human development.

Species conservation initiatives are currently focused on the Philippine Eagle and little attention is being given to the other threatened endemic species, especially in the Lituban–Quipit Watershed. Hunting of wildlife is rampant and local people are unaware of the Philippine Wildlife Act (RA 9147). About 60% of bird-keeping locals said they liked birds as pets, 10% trade them and 30% hunt birds for meat. The species that appear most vulnerable are hornbills, parrots and doves. Many resident forest species may become locally extirpated if the current rate of habitat destruction and unregulated extraction of natural resources continues. Local hunting of Long-tailed Macaques may pose a significant impact on the diet of the Philippine Eagle.

PNP forest appears to be more efficiently protected than that in the Lituban–Quipit Watershed. Regular monitoring and patrolling by the ZCWD forest guards greatly contribute to the protection of the forest and its wildlife. As an indicator, the majority of the endemic and threatened avifauna species were recorded in PNP by the survey team. More thorough survey in Nancy and Cabonegro might even reveal the presence of a breeding pair of Philippine Eagle.

Conservation survey needs

There is a need to conduct more field research and surveys in the remaining forest patches of the Zamboanga Peninsula. Research studies should also focus on a wider number of equally important threatened and endemic species and across different taxa. Many of the threatened and endemic birds we observed in both areas are poorly known and most were mainly surviving in forests below 800 m. Prioritised research areas and focus species include:

- Mt Sugarloaf and Mt Timolan: focus on a number of endemic and threatened birds that have been recorded historically including the Philippine Eagle, Celestial Monarch, Mindanao Broadbill, Little Slaty Flycatcher and Silvery Kingfisher;
- Siocon Resource Reserve: a patch of secondary mature lowland (300–500 m) forest close to the town of Siocon potentially harbours several Mindanao threatened endemic species;
- Mt Dapiak and Mt Paraya (east of Mt Malindang in north-eastern Zamboanga del Sur): Mt Dapiak (980 m) is reportedly mostly denuded but 80% of Mt Paraya (1,186 m) still retains lowland and mid-montane forest cover (Mallari *et al.* 2001), and Philippine Eagle, Silvery Kingfisher, Philippine Dwarf Kingfisher, Little Slaty Flycatcher and Azure-breasted Pitta have been historically recorded on both mountains (Collar *et al.* 1999, Mallari *et al.* 2001).

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Appendix 1

List of bird species recorded in Lake Marangang–Mt Timolan, Lituban–Quipit Watershed and Pasonanca Natural Park, Zamboanga del Sur

B = Baluno, Zamboanga City; N = Nancy, Zamboanga City ; C = Cabonegro, Zamboanga City and I = Intake Dam, Zamboanga City. Globally threatened species are in bold letters while Near Threatened species are in bold italic. Numbers in parentheses refer to abundance scores while asterisk means the bird was observed in a cage.

English name	Scientific name	Noona Dan Expedition (1962)	Lake Maragang–Mt Timolan	Lituban–Quipit Watershed	Pasonanca Natural Park				Total
					B	N	C	I	
Red Junglefowl	*Gallus gallus*		4 (0.13)		1 (0.06)				1
Philippine Duck	*Anas luzanica*		66 (2.20)	5 (0.25)					
Blue-breasted Quail	*Coturnix chinensis*	1	2 (0.07)						
Sooty Woodpecker	*Mulleripicus funebris*	2							
Philippine Woodpecker	*Dendracapas maculatus*		3 (0.10)		1 (0.06)			1 (0.08)	2
White-bellied Woodpecker	*Dryocopus javensis*		2 (0.07)	8 (0.40)	1 (0.06)			1 (0.08)	2
Greater Flameback	*Chrysocoloptes lucidus*	1	1 (0.03)		5 (0.28)			2 (0.17)	7
Coppersmith Barbet	*Megalaima haemacephala*		2 (0.07)		16 (0.89)		7 (0.44)	4 (0.33)	27
Mindanao Hornbill	*Penelapides affinis*		24 (0.80)	3 (0.15)	4 (0.22)	1 (0.07)	2 (0.13)		7
Writhed Hornbill	*Aceras leucocepholus*	1	42 (1.40)	5 (0.25)					
Rufous Hornbill	*Buceras hydrocorax*	2	18 (0.60)	4 (0.20)		2 (0.14)	6 (0.38)		8
Philippine Trogon	*Horpoctes ordens*	1	4 (0.13)		4 (0.22)		6 (0.38)	3 (0.25)	13
Dollarbird	*Eurystamus arientalis*	1	2 (0.07)		3 (0.17)			1 (0.08)	4
Common Kingfisher	*Alcedo atthis*							1 (0.08)	1
Silvery Kingfisher	*Alcedo orgentoto*						1 (0.06)	2 (0.17)	3
Philippine Dwarf Kingfisher	*Ceyx melonurus*	1	1 (0.03)					2 (0.17)	2
Stork-billed Kingfisher	*Pelorgopsis copensis*							1 (0.08)	1
White-throated Kingfisher	*Halcyan smyrnensis*		2 (0.07)	2 (0.10)				2 (0.17)	2
Collared Kingfisher	*Tadiromphus chloris*	1	14 (0.47)	1 (0.05)	6 (0.33)			1 (0.08)	7
Blue-capped Kingfisher	*Actenaides hambrani*		1 (0.03)		1 (0.06)				1
Blue-tailed Bee-eater	*Merops philippinus*	1	6 (0.20)						
Philippine Hawk-cuckoo	*Cuculus pectorolis*				3 (0.17)			1 (0.08)	4
Plaintive Cuckoo	*Cacamantis merulinus*	2		1 (0.05)	2 (0.11)			1 (0.08)	3
Rusty-breasted Cuckoo	*Cacomontis sepulcrolis*		14 (0.47)		4 (0.22)			3 (0.25)	7
Philippine Drongo-cuckoo	*Surniculus velutinus*				6 (0.33)				6
Common Koel	*Eudynomys scalapoceus*			1 (0.05)	2 (0.11)			1 (0.08)	3
Philippine Coucal	*Centropus viridis*		12 (0.40)	1 (0.05)	10 (0.56)			4 (0.33)	14
Black-faced Coucal	*Centrapus melanops*		8 (0.27)	5 (0.25)	4 (0.22)			8 (0.67)	12
Guaiabero	*Balbapsittacus lunulatus*	1			1 (0.06)				1
Blue-naped Parrot	*Tonygnothus lucionensis*	2			2 (0.11)	1 (0.07)		1 (0.08)	4
Blue-backed Parrot	*Tanygnathus sumatranus*				1 (0.06)				1
Blue-crowned Racquet-tail	*Prianiturus discurus*	1		7 (0.35)			1 (0.06)		1
Colasisi	*Loriculus philippensis*	2	2 (0.07)	10 (0.50)	4 (0.22)				4
Uniform Swiftlet	*Aeradramus vanikarensis*		16 (0.53)		1 (0.06)			3 (0.25)	4
Philippine Swiftlet	*Aeradramus mearnsi*			2 (0.10)	26 (1.44)			4 (0.33)	30
Glossy Swiftlet	*Callocalia esculenta*		36 (1.20)	1 (0.05)	4 (0.22)			5 (0.42)	9
Pygmy Swiftlet	*Callacalia troglodytes*		24 (0.80)	3 (0.15)				4 (0.33)	4
Philippine Spinetail	*Meornsio picino*				4 (0.22)				4
Philippine Scops-owl	*Otus megalotis*		1 (0.03)	1 (0.05)					
Philippine Eagle-owl	*Bubo philippensis*			1 (0.05)					
Philippine Hawk-owl	*Ninax philippensis*				1 (0.06)				1
Great Eared Nightjar	*Eurostopodus mocrotis*		2 (0.07)		1 (0.06)				1

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Philippine Nightjar	*Caprimulgus manillensis*				1 (0.06)				1
White-eared Brown Dove	*Phapitreran leucatis*	1	11 (0.37)	2 (0.10)	5 (0.28)		3 (0.19)	4 (0.33)	12
Amethyst Brown Dove	*Phapitreran amethystinus*	5			1 (0.06)				1
Mindanao Brown Dove	*Phapitreran brunneiceps*			1 (0.05)					0
Yellow-breasted Fruit Dove	*Ptilinapus accipitalis*	1	1 (0.03)		1 (0.06)				1
Black-chinned Fruit Dove	*Ptilinapus leclancheri*		3 (0.10)	3 (0.15)	1 (0.06)			1 (0.08)	2
Pink-bellied Imperial Pigeon	*Ducula paliacephala*		2 (0.07)						2
Green Imperial Pigeon	*Ducula aenea*				1 (0.06)		1 (0.06)		2
Philippine Cuckoo-dove	*Macrapygia tenuirastris*	1	30 (1.00)		6 (0.33)			2 (0.17)	8
White-throated Pigeon	*Columba vitiensis*		1 (0.03)						
Emerald Dove	*Chalcophaps indica*		5 (0.17)	1 (0.05)				1 (0.08)	1
Mindanao Bleeding-heart*	*Gallicolumba criniger*								
Island Collared Dove	*Streptapelia bitarquata*			3 (0.15)			1 (0.06)		1
Spotted-necked Dove	*Streptapelia chinensis*			2 (0.10)					
Zebra Dove	*Geopelia striata*			12 (0.60)					
Barred Rail	*Gallirallus torquatus*		2 (0.07)						
Slaty-legged Crake	*Rallina eurizonoides*		2 (0.07)						
White-browed Crake	*Porzana cinerea*		1 (0.03)						
Plain Bush Hen	*Amaurornis olivacea*		1 (0.03)						
White-breasted Waterhen	*Amaurornis phoenicurus*	1	1 (0.03)	1 (0.05)					
Common Moorhen	*Gallinula chloropus*		1 (0.03)						
Pacific Golden Plover	*Pluvialis fulva*	1							
Black-winged Stilt	*Himantopus himantopus*			2 (0.10)					
Osprey	*Pandion haliaetus*				1 (0.06)				1
Barred Honey-buzzard	*Pernis celebensis*			5 (0.25)					
Brahminy Kite	*Haliastur indus*		2 (0.07)	1 (0.05)	1 (0.06)				1
Besra	*Accipiter virgatus*						1 (0.06)		1
Philippine Serpent Eagle	*Spilornis holospilus*		1 (0.03)	1 (0.05)	2 (0.11)			2 (0.17)	4
Philippine Eagle	*Pithecophaga jefferyi*			3 (0.15)					
Philippine Hawk Eagle	*Spizaetus philippensis*			1 (0.05)	2 (0.11)			1 (0.08)	3
Philippine Falconet	*Microhierax erythrogenys*	3			9 (0.50)			1 (0.08)	10
Little Egret	*Egretta garzetta*		24 (0.80)	3 (0.15)					
Javan Pond Heron	*Ardeola speciosa*			49 (2.45)					
Malayan Night Heron	*Gorsachius melanolophus*		1 (0.03)						
Black-crowned Night Heron	*Nycticorax nycticorax*		1 (0.03)						
Cattle Egret	*Bubulcus ibis*		44 (1.47)						
Cinnamon Bittern	*Ixobrychus cinnamomeus*		1 (0.03)	4 (0.20)					
Pink-necked Green Pigeon	*Treron vernans*		5 (0.17)						
Red-bellied Pitta	*Pitta erythrogaster*		6 (0.20)	1 (0.05)	4 (0.22)			1 (0.08)	5
Hooded Pitta	*Pitta sordida*		2 (0.07)		2 (0.11)			1 (0.08)	3
Mindanao Broadbill	*Sarcophanops steerii*		2 (0.07)				6 (0.38)		6
Philippine Leafbird	*Chloropsis flavipennis*				2 (0.11)		2 (0.13)		4
Philippine Fairy-bluebird	*Irena cyanogastra*		2 (0.07)		2 (0.11)			1 (0.08)	3
Pied Triller	*Lalage nigra*		4 (0.13)	1 (0.05)		1 (0.07)			1
Black-and-white Triller	*Lalage melanoleuca*		16 (0.53)	1 (0.05)					
Yellow-bellied Whistler	*Pachycephala philippinensis*	4	24 (0.80)		7 (0.39)		7 (0.44)	2 (0.17)	16

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Large-billed Crow	*Corvus macrorhynchos*		12 (0.40)	4 (0.20)	20 (1.11)				20
White-breasted Woodswallow	*Artamus leucorynchus*		18 (0.60)	2 (0.10)	2 (0.11)				2
Black-naped Oriole	*Oriolus chinensis*		4 (0.13)	5 (0.25)	2 (0.11)			9 (0.75)	11
Philippine Oriole	*Oriolus steerii*	1							
Bar-bellied Cuckooshrike	*Corocino strioto*	1	1 (0.03)	2 (0.10)	1 (0.06)			3 (0.25)	4
McGregor's Cuckooshrike	*Corocino mcgregori*						1 (0.06)		1
Scarlet Minivet	*Pericrocotus flommeus*						1 (0.06)	1 (0.08)	2
Pied Fantail	*Rhipiduro jovonico*		4 (0.13)	1 (0.05)			8 (0.50)		8
Blue Fantail	*Rhipiduro supercilioris*			1 (0.05)					1
Hair-crested Drongo	*Dicrurus hottentottus*		6 (0.20)	1 (0.05)	12 (0.67)		10(0.63)	3 (0.25)	25
Black-naped Monarch	*Hypothymis ozureo*		20 (0.67)		16 (0.89)			7 (0.58)	23
Short-crested Monarch	*Hypothymis helenoe*			8 (0.40)			6 (0.38)		6
Rufous Paradise-flycatcher	*Terpsiphone cinnomomeo*				3 (0.17)		2 (0.13)		5
White-browed Shortwing	*Brochypteryx montono*					6 (0.43)			6
Rufous-tailed Jungle-flycatcher	*Rhinomyios ruficoudo*	1	2 (0.07)					2 (0.17)	2
Slaty-backed Jungle-flycatcher	*Rhinomyios goodfellowi*					1 (0.07)			1
Grey-streaked Flycatcher	*Muscicopo griseisticto*				1 (0.06)				1
Narcissus Flycatcher	*Ficedulo norcissino*	1							
Little Slaty Flycatcher	*Ficedulo bosilonico*							3 (0.25)	3
Cryptic Flycatcher	*Ficedulo crypto*					1 (0.07)			1
Mangrove Blue Flycatcher	*Cyornis rufigostro*		6 (0.20)	3 (0.15)					
Citrine Canary-flycatcher	*Culicicopo heliontheo*						1 (0.06)		1
Oriental Magpie-robin	*Copsychus souloris*		3 (0.10)	2 (0.10)					
Asian Glossy Starling	*Aplonis ponoyensis*		6 (0.20)	4 (0.20)				3 (0.25)	3
Coleto	*Sorcops colvus*		27 (0.90)	6 (0.30)	16 (0.89)			2 (0.17)	18
Elegant Tit	*Porus elegons*		16 (0.53)	3 (0.15)	11 (0.61)		4 (0.25)	4 (0.33)	19
White-fronted Tit	*Porus semilorvotus*		2 (0.07)	2 (0.10)					
Yellow-vented Bulbul	*Pycnonotus goiovier*	2	32 (1.07)	1 (0.05)	9 (0.50)				9
Yellow-wattled Bulbul	*Pycnonotus urostictus*		15 (0.50)		8 (0.44)		4 (0.25)	4 (0.33)	16
Zamboanga Bulbul	*Ixos rufiguloris*	1	102 (3.40)	6 (0.30)	32 (1.78)	1 (0.07)	12(0.75)	3 (0.25)	48
Yellowish Bulbul	*Ixos everetti*			1 (0.05)					
Golden-headed Cisticola	*Cisticolo exilis*			1 (0.05)					
Everett's White-eye	*Zosterops everetti*		6 (0.20)		23 (1.28)				23
Arctic Warbler	*Phylloscopus boreolis*				1 (0.06)				1
Philippine Leaf Warbler	*Phylloscopus olivoceus*			1 (0.05)	7 (0.39)	3 (0.21)	7 (0.44)	3 (0.25)	20
Philippine Tailorbird	*Orthotomus costoneiceps*		14 (0.47)	3 (0.15)					17
White-eared Tailorbird	*Orthotomus cinereiceps*	1	1 (0.03)	4 (0.20)	18 (1.00)	2 (0.14)	4 (0.25)	12(1.00)	36
Tawny Grassbird	*Megolurus timoriensis*		6 (0.20)	1 (0.05)					
Striated Grassbird	*Megolurus polustris*		2 (0.07)	1 (0.05)					
Striated Wren Babbler	*Ptilocichlo mindonensis*			8 (0.40)	2 (0.11)				2
Pygmy Babbler	*Stochyris ploteni*		12 (0.40)		25 (1.39)		3 (0.19)		28
Rusty-crowned Babbler	*Stochyris copitolis*		8 (0.27)				4 (0.25)		4
Brown Tit Babbler	*Mocronus strioticeps*		6 (0.20)		7 (0.39)		5 (0.31)	2 (0.17)	14
Stripe-breasted Rhabdornis	*Rhobdornis inornotus*						2 (0.13)		2
Olive-backed Flowerpecker	*Prionochilus olivoceus*		2 (0.07)	2 (0.10)	6 (0.33)		2 (0.13)		8
Olive-capped Flowerpecker	*Dicoeum nigrilore*						1 (0.06)		1

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Bicolored Flowerpecker	*Dicaeum bicalar*		7 (0.23)	2 (0.10)	21 (1.16)				21
Whiskered Flowerpecker	*Dicoeum praprium*						2 (0.13)		2
Red-striped Flowerpecker	*Dicaeum australe*		9 (0.30)	2 (0.10)	7 (0.39)			6 (0.50)	13
Buzzing Flowerpecker	*Dicaeum hypoleucum*		2 (0.07)	1 (0.05)	11 (0.61)	2 (0.14)			13
Orange-bellied Flowerpecker	*Dicaeum triganastigma*		4 (0.13)	2 (0.10)	30 (1.67)			7 (0.58)	37
Olive-backed Sunbird	*Cinnyris jugularis*	3	15 (0.50)	2 (0.10)	3 (0.17)			6 (0.50)	9
Purple-throated Sunbird	*Leptacomo sperato*		1 (0.03)	1 (0.05)				4 (0.33)	4
Metallic-winged Sunbird	*Aethapyga pulcherrima*		2 (0.07)				2 (0.13)		2
Naked-faced Spiderhunter	*Arochnathera clorae*		1 (0.03)		3 (0.17)				3
Little Spiderhunter	*Arochnothero longirostro*	1	1 (0.03)		2 (0.11)				2
Paddyfield Pipit	*Anthus rufulus*	4							
Eurasian Tree Sparrow	*Posser montonus*		42 (1.40)						
White-bellied Munia	*Lanchuro leucogastro*	2	29 (0.97)	1 (0.05)					
Black-headed Munia	*Lanchura malacca*		36 (1.20)	24 (1.20)	1 (0.06)				1
Java Sparrow	*Lanchura aryzivaro*		2 (0.07)						
Total number of species		34	93	71	73	11	33	53	106
Total number of Threatened species			5	5	4	0	3	4	9
Total number of Philippine endemic species		17	36	31	48	11	28	29	68
Total number of Mindanao endemic species		2	4	6	7	4	9	5	13
Total observation hours			30	20	18	14	16	12	60